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L1: Entry 1 of 3

File: USPT

Aug 19, 1997

US-PAT-NO: 5658640

DOCUMENT-IDENTIFIER: US 5658640 A

TITLE: Electret filter media having an undulated surface

DATE-ISSUED: August 19, 1997

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------------|----------|-------|----------|---------|
| Berrigan; Michael R. | Oakdale | MN | | |
| Olson; David A. | St. Paul | MN | | |

US-CL-CURRENT: 428/152; 428/156, 428/167, 428/171, 428/220,
428/903, 428/92, 428/93

ABSTRACT:

Filter media is provided. The filter media comprises a web of melt blown microfibers having one surface substantially flat and the other surface having periodic wrinkle-like undulations. A method of making the filter media is also provided. The filter media is useful in electret filters when charged.

10 Claims, 7 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | MMC | Drawing Desc | Image |
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☐ 2. Document ID: US 5021050 A

L1: Entry 2 of 3

File: USPT

Jun 4, 1991

US-PAT-NO: 5021050

DOCUMENT-IDENTIFIER: US 5021050 A

TITLE: Absorbent panel structure

DATE-ISSUED: June 4, 1991

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------|------|-------|----------|---------|
| Iskra; Michael J. | Kent | WA | | |

US-CL-CURRENT: 604/379; 604/368

ABSTRACT:

An absorbent panel structure, for use in a disposable diaper or the like, comprising at least about 400 percent by weight of superabsorbent material and at least one wicking layer of hydrophilic fiber particles. The absorbent panel has an average Taber stiffness value in the machine direction of less than about 7 and an absorptive capacity of at least about 300 ml.

20 Claims, 9 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | RWC | Draw Desc | Image |
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☐ 3. Document ID: US 3972763 A

L1: Entry 3 of 3

File: USPT

Aug 3, 1976

US-PAT-NO: 3972763

DOCUMENT-IDENTIFIER: US 3972763 A

TITLE: Method of laminating planar and corrugated surface defining layers of sheet material

DATE-ISSUED: August 3, 1976

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------------------|----------|-------|----------|---------|
| Wolvin; Arthur Dale | Longview | WA | | |
| Morris, Jr.; Richard Milton | Bellevue | WA | | |

US-CL-CURRENT: 156/210; 156/291, 156/295, 428/182, 428/186, 428/195, 428/211

ABSTRACT:

The product is a laminar composite of two or more adhesively bonded layers of sheet material, one of which has a corrugated surface contour at the interface between the layers. The layers are bonded together at the ridges of the corrugated surface of the one layer, and the bond on each ridge consists essentially of a series of relatively localized spots of a plastically deposited but adhesively set adhesive material. The spots are located at intervals spaced apart from one another lengthwise of the ridge,

and are characterized with oblate cross sections in planes normal to the interface between the layers, resulting from the fact that the spots undergo compression in the plastic state thereof during the process. The bonding operation is accomplished by causing relative motion between the corrugated web and a series of spaced parallel lines of adhesive material which are disposed crosswise of the ridges of the web and contacted with the ridges so as to deposit the spots thereon.

14 Claims, 22 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 6

Full Title Citation Front Review Classification Date Reference Sequences Attachments Claims RWC Draw Desc Image

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| Term | Documents |
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| "3972763"[USPT] | 1 |
| 3972763S | 0 |
| "5021050"[USPT] | 1 |
| 5021050S | 0 |
| "5658640"[USPT] | 1 |
| 5658640S | 0 |
| ("3972763" OR "5021050" OR "5658640")[PN].USPT. | 3 |
| ((3972763 OR 5021050 OR 5658640)[PN]).USPT. | 3 |

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WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 8 of 8 returned.**☐ 1. Document ID: US 5932316 A

L7: Entry 1 of 8

File: USPT

Aug 3, 1999

US-PAT-NO: 5932316

DOCUMENT-IDENTIFIER: US 5932316 A

TITLE: Method for forming a nonwoven web exhibiting surface energy gradients and increased caliper

DATE-ISSUED: August 3, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------|------------|-------|----------|---------|
| Cree; James W. | Cincinnati | OH | | |
| Ravaglia; Luis E. | Caracas | | | VEX |

US-CL-CURRENT: 428/182; 428/174, 428/195, 442/79, 442/81, 442/82,
604/381, 604/382

ABSTRACT:

The present invention pertains, in a preferred embodiment, to a method for forming a nonwoven web exhibiting a plurality of surface energy gradients. The method includes the steps of: providing a nonwoven web of fibers exhibiting a surface energy, the nonwoven web having a first surface, a second surface, a caliper, and a plurality of fluid passageways placing the first and second surfaces in fluid communication with one another; applying a surface treatment to the first surface of the nonwoven web, the surface treatment having a surface energy less than the surface energy of the fibers of the nonwoven web creating a plurality of surface energy gradients defined by discontinuous, spaced regions which are adapted to exert a force on a fluid contacting the first surface, such that the fluid will be directed toward the fluid passageways for transportation away from the first surface and in the direction of the second surface; and increasing the caliper of the nonwoven web by feeding the nonwoven web between a first pressure applicator and a second pressure applicator each having three-dimensional surfaces which at least to a degree are complementary to one another. The nonwoven web is particularly well suited for use as a topsheet on a disposable absorbent article.

8 Claims, 14 Drawing figures
Exemplary Claim Number: 1

Number of Drawing Sheets: 9

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 2. Document ID: US 5814390 A

L7: Entry 2 of 8

File: USPT

Sep 29, 1998

US-PAT-NO: 5814390

DOCUMENT-IDENTIFIER: US 5814390 A

TITLE: Creased nonwoven web with stretch and recovery ✓

DATE-ISSUED: September 29, 1998

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|-----------|-------|----------|---------|
| Stokes; Ty Jackson | Suwanee | GA | | |
| Butt, Sr.; Jon Richard | Woodstock | GA | | |
| Wright; Alan Edward | Woodstock | GA | | |

US-CL-CURRENT: 428/181; 15/209.1, 2/123, 28/155, 428/182, 428/219,
428/220, 442/328, 442/353, 442/381, 442/394

ABSTRACT:

Nonwoven fabrics having a desirable level of bulk, elasticity and low permanent set are produced by creasing a precursor web and heat setting the creases. Such webs may have varying basis weights and compositions depending on the intended end use. Applications disclosed include components for personal care products such as disposable diapers and feminine hygiene products, for example, as well as garment applications such as training pants, surgical gowns and the like. Also, absorbent products such as wipers are disclosed. Methods for forming the creased nonwoven fabric are disclosed using interdigitated rolls for creasing in the machine direction or in the cross-machine direction.

26 Claims, 8 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 6

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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| MM | Draw Desc | Image |
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☐ 3. Document ID: US 5792404 A

L7: Entry 3 of 8

File: USPT

Aug 11, 1998

US-PAT-NO: 5792404

DOCUMENT-IDENTIFIER: US 5792404 A

TITLE: Method for forming a nonwoven web exhibiting surface energy gradients and increased caliper

DATE-ISSUED: August 11, 1998

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP | CODE | COUNTRY |
|-------------------|-----------------------------|-------|-----|------|---------|
| Cree; James W. | Cincinnati | OH | | | |
| Ravaglia; Luis E. | Colinas Bello Monte-Caracas | | | | VEX |

US-CL-CURRENT: 264/134; 264/130, 264/283, 442/2, 442/81

ABSTRACT:

The present invention pertains, in a preferred embodiment, to a method for forming a nonwoven web exhibiting a plurality of surface energy gradients. The method includes the steps of: providing a nonwoven web of fibers exhibiting a surface energy, the nonwoven web having a first surface, a second surface, a caliper, and a plurality of fluid passageways placing the first and second surfaces in fluid communication with one another; applying a surface treatment to the first surface of the nonwoven web, the surface treatment having a surface energy less than the surface energy of the fibers of the nonwoven web creating a plurality of surface energy gradients defined by discontinuous, spaced regions which are adapted to exert a force on a fluid contacting the first surface, such that the fluid will be directed toward the fluid passageways for transportation away from the first surface and in the direction of the second surface; and increasing the caliper of the nonwoven web by feeding the nonwoven web between a first pressure applicator and a second pressure applicator each having three-dimensional surfaces which at least to a degree are complementary to one another. The nonwoven web is particularly well suited for use as a topsheet on a disposable absorbent article.

27 Claims, 14 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 9

Full Title Citation Front Review Classification Date Reference Sequences Attachments

RMCD Draw Desc Image

☐ 4. Document ID: US 5725734 A

L7: Entry 4 of 8

File: USPT

Mar 10, 1998

US-PAT-NO: 5725734

DOCUMENT-IDENTIFIER: US 5725734 A

TITLE: Transfer system and process for making a stretchable fibrous web and article produced thereof

DATE-ISSUED: March 10, 1998

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP | CODE | COUNTRY |
|-----------------------------|-------------|-------|-----|------|---------|
| Herman; Jeffrey Bruce | Bala Cynwyd | PA | | | |
| Trumbull; John Ghordis | Lima | PA | | | |
| Wolkowicz; Richard Ignatius | Cumming | GA | | | |

US-CL-CURRENT: 162/111; 162/196, 162/197, 162/202

ABSTRACT:

A transfer configuration for a paper making machine, the transfer configuration being composed of: 1) a first carrier fabric having a first surface on which a fibrous web is transported to the transfer configuration at a first velocity; 2) a second carrier fabric having a second surface on which the fibrous web is transported away from the transfer configuration at a second velocity that is less than the first velocity; 3) a lengthened transfer zone that begins at a transfer shoe and terminates at a portion of a transfer head and has a machine direction oriented length ranging from about 0.75 inches to about 10 inches; 4) means for guiding the first carrier fabric and fibrous web over the transfer shoe so they converge at a first angle with the second carrier fabric, the first angle being sufficient to generate centrifugal force to aid transfer of the fibrous web and so the first and second carrier fabrics begin diverging immediately after the transfer shoe at a second angle such that the distance between the first and second carrier fabrics through the transfer zone is about equal to the thickness of the fibrous web; and 5) means for applying a gaseous pressure differential to complete the separation of the fibrous web from the first carrier fabric, so that the resulting fibrous web has greater machine direction extensibility than fibrous webs processed with the same carrier fabrics in differential speed transfer configurations without a lengthened transfer zone.

21 Claims, 5 Drawing figures
Exemplary Claim Number: 9
Number of Drawing Sheets: 5

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☐ 5. Document ID: US 5620545 A

L7: Entry 5 of 8

File: USPT

Apr 15, 1997

US-PAT-NO: 5620545

DOCUMENT-IDENTIFIER: US 5620545 A

TITLE: Method of making a corrugated nonwoven web of polymeric microfiber

DATE-ISSUED: April 15, 1997

INVENTOR- INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|-----------|-------|----------|---------|
| Braun; David L. | Lake Elmo | MN | | |
| Steffen; James E. | Woodbury | MN | | |
| Venkatapathy; Raju | Woodbury | MN | | |

US-CL-CURRENT: 156/205; 156/210

ABSTRACT:

A method of making a corrugated nonwoven web of polymeric microfiber, which method comprises:

(a) introducing a nonwoven web of polymeric microfiber having a solidity of 0.1 or less into a corrugating apparatus that has a plurality of paddles secured at a first end to a means for moving the paddles about a path, the nonwoven web of polymeric microfiber making contact with spaced second ends of the paddles opposite to the paddles' first ends; and

(b) reducing the spacing between the second ends of the paddles to cause the nonwoven web of polymeric microfiber to become corrugated, wherein the corrugated nonwoven web of polymeric microfiber has a solidity of 0.1 or less.

26 Claims, 13 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 9

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| Full | Title | Citation | Front | Review | Classification | Data | Reference | Sequences | Attachments |
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☐ 6. Document ID: US 5558924 A

L7: Entry 6 of 8

File: USPT

Sep 24, 1996

US-PAT-NO: 5558924

DOCUMENT-IDENTIFIER: US 5558924 A

TITLE: Method for producing a corrugated resin-bonded or thermo-bonded fiberfill and the structure produced thereby

DATE-ISSUED: September 24, 1996

INVENTOR- INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------------------|----------------|-------|----------|---------|
| Chien, deceased; Tien-Sheng | late of Taipei | | | TWX |
| Chien; Jung-Fu | Montebello | CA | | |
| Chien; Paul C. | Montebello | CA | | |
| Lu; Hsiu-Lan | Taipei Hsien | | | TWX |

US-CL-CURRENT: 428/181; 156/205, 156/210, 156/62.2, 156/62.6,
19/163, 428/179, 428/183, 428/184

ABSTRACT:

A method is provided for forming a corrugated structure from a fibrous web by first forming a fibrous web; alternately lapping the fibrous web; folding the fibrous web to form corrugations; brushing fibers from one corrugated peak to extend to an adjacent peak and bridge the gap therebetween; spraying resin on the corrugated fibrous web; heating the resin-sprayed corrugated fibrous web; or further sandwiching said fibrous web with a pair of outer webs with resin sprayed thereon and heating said sandwiched fibrous web. Another embodiment initially combines fibers of low melting point with regular fibers and heats the corrugated fibrous web after brushing, rather than spraying resin on the corrugated fibrous web.

16 Claims, 14 Drawing figures
Exemplary Claim Number: 1,15
Number of Drawing Sheets: 9

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 7. Document ID: US 5366793 A

L7: Entry 7 of 8

File: USPT

Nov 22, 1994

US-PAT-NO: 5366793

DOCUMENT-IDENTIFIER: US 5366793 A

TITLE: Anisotropic nonwoven fibrous web

DATE-ISSUED: November 22, 1994

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------------|-------------|-------|----------|---------|
| Fitts, Jr.; James R. | Gainesville | GA | 30506 | |
| Musselwhite; William D. | Canton | GA | 30114 | |
| Varona; Eugenio G. | Marietta | GA | 30062 | |
| Wright; Robert D. | Atlanta | GA | 30341 | |

US-CL-CURRENT: 428/198; 156/167, 428/114, 428/152, 428/219,
428/326, 428/903, 442/400

ABSTRACT:

Disclosed is an anisotropic elastomeric nonwoven fibrous web composed of a substantially homogeneous distribution of elastomeric meltblown fibers that are physically aligned along one of the planar dimensions of the web. The anisotropic elastomeric nonwoven web of meltblown fibers has a strength index of at least about 2.

Also disclosed is process of making such an anisotropic elastomeric nonwoven web of meltblown fibers as well as a composite elastic material which contains an anisotropic elastomeric nonwoven web of meltblown fibers.

21 Claims, 7 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 5

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 8. Document ID: US 5227107 A

L7: Entry 8 of 8

File: USPT

Jul 13, 1993

US-PAT-NO: 5227107

DOCUMENT-IDENTIFIER: US 5227107 A

TITLE: Process and apparatus for forming nonwovens within a forming chamber

DATE-ISSUED: July 13, 1993

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|------------|-------|----------|---------|
| Dickenson; F. Lee | Alpharetta | GA | | |
| Abuto; Frank P. | Alpharetta | GA | | |
| Chambers, Jr.; Leon E. | Cumming | GA | | |
| Werner; Edward E. | Oshkosh | WI | | |
| Wisneski; Tony J. | Kimberly | WI | | |

US-CL-CURRENT: 264/113; 264/115, 264/118, 264/121, 264/510,
264/518, 425/81.1, 425/83.1

ABSTRACT:

The present invention relates to a multicomponent fibrous nonwoven structure and the process and apparatus for producing the same. More specifically, the present invention relates to a process for forming nonwoven materials using a forming chamber in conjunction with multiple fiber sources and a forming surface to create multicomponent nonwoven materials with varying features. The materials so produced are suitable for use in a wide variety of applications including personal care products such as diapers, feminine pads and adult incontinence products.

38 Claims, 21 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 7

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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| Term | Documents |
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| "5366793"[USPT] | 1 |
| 5366793S | 0 |
| "5558924"[USPT] | 1 |
| 5558924S | 0 |
| "5620545"[USPT] | 1 |
| 5620545S | 0 |
| "5725734"[USPT] | 1 |
| 5725734S | 0 |
| "5792404"[USPT] | 1 |
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L6: Entry 1 of 11

File: USPT

Mar 30, 1993

US-PAT-NO: 5198057

DOCUMENT-IDENTIFIER: US 5198057 A

TITLE: Rebulkable nonwoven fabric

DATE-ISSUED: March 30, 1993

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|--------------|-------|----------|---------|
| Newkirk; David D. | Greer | SC | | |
| Ostrowski; Henry S. | Simpsonville | SC | | |

US-CL-CURRENT: 156/83; 156/281, 156/308.2, 53/430 ✓

ABSTRACT:

Disclosed is a process for making bulky nonwoven fabric suitable for use in diaper constructions that comprises the steps of (a) forming a web of one or more layers comprised at least in part of thermoplastic bicomponent fibers, (b) bonding said web by means of a thru-air system, (c) compressing--either in a nip or by winding--the resulting bonded web to increase its density, (d) transporting and/or otherwise manipulating the compressed web, and (e) subsequently transforming said compressed web, by means of exposure to heat, into the low density bulky nonwoven fabric. The bulky nonwoven fabrics are particularly useful as diaper coverstock and as diaper spacer fabrics.

12 Claims, 0 Drawing figures

Exemplary Claim Number: 1

[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#) [Sequences](#) [Attachments](#)[MENC](#) [Draw Desc](#) [Image](#)☐ 2. Document ID: US 5167740 A

L6: Entry 2 of 11

File: USPT

Dec 1, 1992

US-PAT-NO: 5167740

DOCUMENT-IDENTIFIER: US 5167740 A

TITLE: Method of making a filter insert of nonwoven material in the form of a pleated pack

DATE-ISSUED: December 1, 1992

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------|------------|-------|----------|---------|
| Michaelis; Udo | Weierstadt | | | DEX |
| Schlor; Ulrich | Darmstadt | | | DEX |

US-CL-CURRENT: 156/73.1; 156/202, 156/204, 156/227, 210/493.3,
210/493.5, 428/126, 428/181, 493/941, 55/500, 55/521

ABSTRACT:

A filter insert of nonwoven material in the form of a pleated pack is self-supporting and consists of thermally weldable nonwoven (1). Each of the two outside ends (3) of the pleated pack (2) is hemmed by the nonwoven material (1) forming the pleats, which is folded over in the same direction and at the same time is fixed in tight contact to the corresponding folded of the adjacent pleat end. At the same time the nonwoven material projects beyond the near crease of the adjacent pleat end by 0.5 to 1.5 times the pleat spacing. For manufacture, the flat filter material (1) is first pleated and then a defined pleat spacing (7) is produced by drawing it apart to a limited extent. Then the two outside edges (8) of the pleated pack are gripped between comb-like tools (9) entering pincer-wise into the pleating at top and bottom, leaving the filter material projecting beyond the tools on each side by 1.5 to 2.5 times the pleat spacing (7). The projecting material (10) is folded over on both sides by means of a first pressers (11) acting thereon, until the projecting material (10) contacts the adjacent pleat end, so that the edges overlap one another. Energy permitting the thermal welding is delivered through these pressers (11). Additional pressers (12) that follow fix the welds during the cooling. Then the comb-like tools (9) are removed and the pleated pack is cut to length.

8 Claims, 4 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 3

Full Title Citation Front Review Classification Date Reference Sequences Attachments

MMNC Draw Desc Image

☐ 3. Document ID: US 5093069 A

L6: Entry 3 of 11

File: USPT

Mar 3, 1992

US-PAT-NO: 5093069

DOCUMENT-IDENTIFIER: US 5093069 A

TITLE: Process and device for the production of mineral wool

nonwoven fabrics especially from rock wool

DATE-ISSUED: March 3, 1992

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|-------------|-------|----------|---------|
| Mellem; Joachim | Schriesheim | | | DEX |
| Hirschmann; Klemens | Ilvesheim | | | DEX |
| Ungerer; Heinz-Juergen | Viernheim | | | DEX |
| Furtak; Hans | Speyer | | | DEX |

US-CL-CURRENT: 264/510; 156/62.2, 156/62.4, 156/62.8, 264/113,
264/518, 425/81.1, 425/82.1

ABSTRACT:

In the continuous production of mineral wool nonwoven fabrics, fiber/gas/air mixtures (3, 4) produced by several shredding units (14 to 17) are directed onto collecting conveyor units (19, 21) with suction surfaces (c, d) running in a curve and being under suction pressure for the formation of a wool nonwoven fabric (25). In this case the arrangement is such that an imaginary suction surface, increasing in its size in the conveying direction, is assigned to each fiber/gas/air mixture formed by the individual shredding units (14 to 17), actually d is larger than c. As a result it is possible, in a space-saving method of construction and per collecting conveyor unit to produce mineral wool nonwoven fabrics from rock wool with constant suction pressure with bulk densities even under 25 kg/m.^{sup.3} in good product quality. By series connection of several units or an oscillating deposit of an individual nonwoven fabric multilayer felt webs can further be formed.

19 Claims, 5 Drawing figures

Exemplary Claim Number: 1,2

Number of Drawing Sheets: 5

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☐ 4. Document ID: US 5071615 A

L6: Entry 4 of 11

File: USPT

Dec 10, 1991

US-PAT-NO: 5071615

DOCUMENT-IDENTIFIER: US 5071615 A

TITLE: Method and appartus for manufacturing fiber slabs

DATE-ISSUED: December 10, 1991

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|-------|-------|----------|---------|
| Ranzen; Carl O. | Solna | | | SEX |

US-CL-CURRENT: ~~264/510~~; ~~264/112~~, ~~264/121~~, ~~264/518~~, ~~425/81.1~~,
~~425/83.1~~

ABSTRACT:

The present invention relates to a method and an apparatus for manufacturing a fiber slab (32), in which a fiber/air suspension is blown through a nozzle into a forming space (9). The forming space is defined by two mutually facing belt parts of two endless belts (10, 11). For the purpose of manufacturing the novel fiber slab, there is generated between the nozzle exit orifice (8') and the forming chamber a mist of highly liquid adhesive, and the fibers are imparted kinetic energy of such high value that the fibers pass essentially rectilinearly through the mist and into the forming chamber, where they collect on the slab end surface (36) earlier formed in the forming chamber and facing the nozzle.

10 Claims, 3 Drawing figures
Exemplary Claim Number: 1,7
Number of Drawing Sheets: 2

Full Title Citation Front Review Classification Date Reference Sequences Attachments

PMC Draw Desc Image

☐ 5. Document ID: US 4955999 A

L6: Entry 5 of 11

File: USPT

Sep 11, 1990

US-PAT-NO: ~~4955999~~

DOCUMENT-IDENTIFIER: US 4955999 A

TITLE: Stationary strand deflector for continuous strand manufacture

DATE-ISSUED: September 11, 1990

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------------|------------------|-------|----------|---------|
| Schaefer; William L. | Butler | PA | | |
| Reese; Walter J. | North Huntingdon | PA | | |

US-CL-CURRENT: ~~65/479~~; ~~156/62.4~~, ~~65/505~~, ~~65/535~~

ABSTRACT:

A strand deflector used in the manufacture of continuous strands is shown and described. The deflector comprises a rigid surface which stretches across the width of the mat making machine and which is interposed between the strand feeders located above it and the mat making surface so that the strands fed toward the surface must

deflect from the deflector surface before they are collected on the mat making surface. The deflector surface is adjustable in the vertical direction and the angle of deflection with respect to the flow of strand from the feeder may also be changed to any desired value.

6 Claims, 2 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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| FWD | Draw Desc | Image |
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☐ 6. Document ID: US 4908175 A

L6: Entry 6 of 11

File: USPT

Mar 13, 1990

US-PAT-NO: 4908175

DOCUMENT-IDENTIFIER: US 4908175 A

TITLE: Apparatus for and methods of forming airlaid fibrous webs having a multiplicity of components

DATE-ISSUED: March 13, 1990

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------|------------|-------|----------|---------|
| Angstadt; John J. | Cincinnati | OH | | |

US-CL-CURRENT: 264/113; 264/121, 264/517, 264/518, 425/80.1,
425/81.1

ABSTRACT:

Apparatus for and methods of forming, from a single column of fibers, an airlaid fibrous web having a multiplicity of components. The apparatus is of the type which includes a first laydown drum having a first foraminous forming element; a second laydown drum having a second foraminous forming element; a splitter chute apparatus for splitting a column of fibers into a multiplicity of fiber streams and for entraining each of the fiber streams in air so as to provide a multiplicity of streams of air-entrained fibers; a first deposition chute for directing a first stream of air-entrained fibers from the splitter chute to the first laydown drum; a second deposition chute for directing a second stream of air-entrained fibers from the splitter chute to the second laydown drum; a dusting layer deposition chute for directing a dusting layer stream of air-entrained fibers from the splitter chute to the first laydown drum; and a uniting apparatus for uniting a first web component that is formed on the first laydown drum with a second web component that is formed on the second laydown drum to form an airlaid fibrous web having a multiplicity of components.

17 Claims, 11 Drawing figures

Exemplary Claim Number: 1,12
Number of Drawing Sheets: 7

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☐ 7. Document ID: US 4852666 A

L6: Entry 7 of 11

File: USPT

Aug 1, 1989

US-PAT-NO: 4852666

DOCUMENT-IDENTIFIER: US 4852666 A

TITLE: Apparatus for and a method of drilling offset wells for producing hydrocarbons

DATE-ISSUED: August 1, 1989

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|-----------|-------|----------|---------|
| Brunet; Charles G. | Lafayette | LA | 70503 | |
| Watson; Alton | Lafayette | LA | 70503 | |

US-CL-CURRENT: 175/61; 166/117.5, 175/62, 175/73, 175/80, 175/82

ABSTRACT:

A directional guidance device, for deflecting a drill bit away from the longitudinal axis of a substantially horizontal section of a wellbore, takes advantage of gravitational force to move a deflector member therein between first and second positions. In the first position, the deflector member prevents the drill bit from advancing past the directional guidance device. In the second position, the deflector member allows the bit to pass out of the guidance device, and deflects the bit away from the longitudinal axis of the horizontal section of the wellbore.

30 Claims, 8 Drawing figures

Exemplary Claim Number: 1,12

Number of Drawing Sheets: 5

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| KWIC | Draw Desc | Image |
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☐ 8. Document ID: US 4741941 A

L6: Entry 8 of 11

File: USPT

May 3, 1988

US-PAT-NO: 4741941

DOCUMENT-IDENTIFIER: US 4741941 A

TITLE: Nonwoven web with projections

DATE-ISSUED: May 3, 1988

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------------|-------------|-------|----------|---------|
| Englebert; Stephen M. | Woodstock | GA | | |
| Wagner; Ann L. | Hortonville | WI | | |
| Hafer; Gregory S. | Atlanta | GA | | |
| Logsdon; Nanette J. | Appleton | WI | | |

US-CL-CURRENT: 428/71; 15/209.1, 15/215, 15/217, 15/223, 15/229.11,
156/176, 156/178, 156/181, 156/252, 156/270, 156/279 , 19/296,
19/301, 19/302, 428/112, 428/113, 428/76, 602/45, 602/76, 604/384

ABSTRACT:

Nonwoven web and method of making including interbonded thermoplastic fibers in an array of hollow projections extending outwardly from at least one surface of said web. The projections are separated by land areas of interbonded fibers, and the fiber orientation is greater in the projections than in the land areas. Either the projections or the land areas may be perforated as desired for controlled porosity and fluid flow properties. The nonwoven webs of the invention may be made by a number of processes but, preferably, are made by forming directly on a surface with corresponding projections with or without apertures and a vacuum assist or by forming on an apertured surface with a pressure differential sufficient to draw the fibers through the apertures forming the projections. The disclosure includes such webs with added fiber layers and as components of a wide variety of products including personal care items such as liners for sanitary napkins, household products such as cleaning materials and wipers, in the service product area such as towels, washcloths and bathmats, in the marine and automotive area as scrubbing and protective applicators, and in the hospital and veterinary areas as wipes and dispensing cloths. The method and apparatus disclosed may be varied as to steps and configuration to impart desired web constructions and properties, and preferred embodiments are disclosed.

71 Claims, 38 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 12

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| FWMC | Draw Desc | Image |
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☐ 9. Document ID: US 4624819 A

L6: Entry 9 of 11

File: USPT

Nov 25, 1986

US-PAT-NO: 4624819

DOCUMENT-IDENTIFIER: US 4624819 A

TITLE: Method for producing layers of dry fibres on a forming surface

DATE-ISSUED: November 25, 1986

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------------|-----------|-------|----------|---------|
| Hartog; Stefan M. | Stockholm | | | SEX |
| Hollmark; Bernt H. F. | Huddinge | | | SEX |

US-CL-CURRENT: 264/510; 264/113, 264/121, 264/517, 264/518, 425/80.1, 425/81.1, 425/83.1

ABSTRACT:

The invention relates to a method and an apparatus for producing layers of dry fibres and/or particles on a forming surface pervious to air. According to the invention, the material is distributed in air and passed to a forming unit where a turbulence with high intensity is effected in that air is injected through separate nozzles.

18 Claims, 3 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

Full Title Citation Front Review Classification Date Reference Sequences Attachments

RMAC Draw Desc Image

☐ 10. Document ID: US 4548856 A

L6: Entry 10 of 11

File: USPT

Oct 22, 1985

US-PAT-NO: 4548856

DOCUMENT-IDENTIFIER: US 4548856 A

TITLE: Method for forming soft, bulky absorbent webs and resulting product

DATE-ISSUED: October 22, 1985

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|----------|-------|----------|---------|
| Ali Khan; Mir I. | Appleton | WI | | |
| Schmidt; Richard J. | Appleton | WI | | |

US-CL-CURRENT: 428/171; 156/209, 156/247, 156/296, 156/323, 428/156, 428/195, 428/373, 428/913, 442/361, 442/411

ABSTRACT:

Improved method and apparatus for forming soft, bulky absorbent

webs including thermoplastic fibers. The web is bonded under conditions that heat the thermoplastic fibers to produce web bonding while avoiding direct contact with the heat source. The apparatus includes a pair of foraminous belts or wires between which the web or webs to be bonded are enclosed. The construction of the foraminous wires and belts is selected to produce the desired degree of bonding and yet maintain separation between the subsequently applied heat source and the web or webs. The combination of the web and belts or wires is then directed under tension to a heat source which may be, for example, a series of heated cans, and the opposite sides of the combination are alternately contacted by the surfaces. After heating, the web is allowed to cool and retains its bonded configuration determined by the structure of the wires or belts and the content of the web. Examples of webs which may be so bonded include pulp fluff having mixed therein thermoplastic bonding fibers such as polypropylene/polyethylene biconstituents, for example, Chisso ES. The construction of the belt or wires preferably is such that at least about 20% open area is provided upon contact with the web for sufficient strength properties to be obtained. In alternative embodiments, multiple webs of the same or different compositions may be fed between the wires or belts and laminates produced. Webs of the invention retain highly desirable absorbency properties since the open structure is maintained to a high degree by avoiding direct contact with the heat source that would otherwise produce excessive fusing and overbonding of the webs.

12 Claims, 16 Drawing figures
Exemplary Claim Number: 8
Number of Drawing Sheets: 7

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☐ 11. Document ID: US 4488928 A

L6: Entry 11 of 11

File: USPT

Dec 18, 1984

US-PAT-NO: 4488928

DOCUMENT-IDENTIFIER: US 4488928 A

TITLE: Method and apparatus for forming soft, bulky absorbent webs and resulting product

DATE-ISSUED: December 18, 1984

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|----------|-------|----------|---------|
| Ali Khan; Mir I. | Appleton | WI | | |
| Schmidt; Richard J. | Appleton | WI | | |

US-CL-CURRENT: 156/495; 156/160, 156/296, 156/324, 156/499,
156/555, 156/583.5

ABSTRACT:

Improved method and apparatus for forming soft, bulky absorbent webs including thermoplastic fibers. The web is bonded under conditions that heat the thermoplastic fibers to produce web bonding while avoiding direct contact with the heat source. The apparatus includes a pair of foraminous belts or wires between which the web or webs to be bonded are enclosed. The construction of the foraminous wires and belts is selected to produce the desired degree of bonding and yet maintain separation between the subsequently applied heat source and the web or webs. The combination of the web and belts or wires is then directed under tension to a heat source which may be, for example, a series of heated cans, and the opposite sides of the combination are alternately contacted by the surfaces. After heating, the web is allowed to cool and retains its bonded configuration determined by the structure of the wires or belts and the content of the web. Examples of webs which may be so bonded include pulp fluff having mixed therein thermoplastic bonding fibers such as polypropylene/polyethylene biconstituents, for example, Chisso ES. The construction of the belt or wires preferably is such that at least about 20% open area is provided upon contact with the web for sufficient strength properties to be obtained. In alternative embodiments, multiple webs of the same or different compositions may be fed between the wires or belts and laminates produced. Webs of the invention retain highly desirable absorbency properties since the open structure is maintained to a high degree by avoiding direct contact with the heat source that would otherwise produce excessive fusing and overbonding of the webs.

5 Claims, 16 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 7

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| "4741941"[USPT] | 1 |
| 4741941S | 0 |
| "4908175"[USPT] | 1 |
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L5: Entry 1 of 11

File: USPT

Apr 3, 1984

US-PAT-NO: 4440597

DOCUMENT-IDENTIFIER: US 4440597 A

TITLE: Wet-microcontracted paper and concomitant process

DATE-ISSUED: April 3, 1984

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|--------------|-------|----------|---------|
| Wells; Edward R. | Cincinnati | OH | | |
| Hensler; Thomas A. | West Chester | OH | | |

US-CL-CURRENT: 162/111; 162/112, 162/113, 162/118, 162/123,
162/188, 428/154

ABSTRACT:

High bulk, absorbent paper having a relatively high MD elongation at rupture, and a substantially greater stress/strain modulus in the lowest one-third of its range of MD extensibility--preferably when wet--than equally machine-direction-stretchable, purely dry-foreshortened (e.g., dry-creped) paper having substantially identical MD elongation at rupture. The process includes a differential velocity transfer of a wet-laid embryonic web having relatively low fiber consistency from a carrier to a substantially slower moving, open-mesh transfer fabric having a substantial void volume; and thereafter drying the web while precluding substantial macroscopic rearrangement of the fibers in the plane of the web. The differential velocity transfer is effected without substantial compaction of the web by avoiding substantial mechanical pressing, centrifugal slinging, air blasting, and the like. The MD stress-strain property of the paper when wet is directly related to the magnitude of the differential velocity at transfer; to the magnitude of the wet-strength property of the paper; and to the topography of the transfer fabric.

27 Claims, 18 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 11

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)[Full](#) | [Draw Desc](#) | [Image](#)

☐ 2. Document ID: US 4434205 A

L5: Entry 2 of 11

File: USPT

Feb 28, 1984

US-PAT-NO: 4434205

DOCUMENT-IDENTIFIER: US 4434205 A

TITLE: Artificial leathers

DATE-ISSUED: February 28, 1984

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|---------|-------|----------|---------|
| Fujii; Shigeo | Saitama | | | JPX |
| Ikeda; Tokuzo | Saitama | | | JPX |
| Mikami; Takashi | Saitama | | | JPX |
| Okano; Shuji | Saitama | | | JPX |

US-CL-CURRENT: 428/218; 428/219, 428/220, 428/340, 428/423.1,
428/904, 442/105, 442/281, 442/60

ABSTRACT:

An artificial leather is made by impregnating a special nonwoven web substrate with an elastic polymer material. In another embodiment the substrate comprises a nonwoven fabric laminated to a woven or nonwoven fabric.

21 Claims, 14 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

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☐ 3. Document ID: US 4357379 A

L5: Entry 3 of 11

File: USPT

Nov 2, 1982

US-PAT-NO: 4357379

DOCUMENT-IDENTIFIER: US 4357379 A

TITLE: Melt blown product

DATE-ISSUED: November 2, 1982

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|-----------|-------|----------|---------|
| Sloan; Cephas H. | Kingsport | TN | | |
| Wright; Jerry A. | Kingsport | TN | | |
| Morie; Gerald P. | Kingsport | TN | | |

US-CL-CURRENT: 428/113; 428/212, 428/213, 428/218, 428/364,
428/373, 428/376, 428/395, 428/397, 442/400

ABSTRACT:

Thermoplastic materials are converted directly into thermally bonded, coherent fibrous products by melt blowing techniques. The fibrous product is in the form of a rod having a relatively dense, rigid skin in which the fiber portions are oriented primarily in a longitudinal direction with respect to the axis of the product, and a less dense core where the fiber portions are oriented primarily in a transverse direction with respect to the axis of the product. The products are made by melt blowing fibers and intercepting them by a fiber collecting and forming device which permits a relatively heavy build-up of fiber mass in the central portion and a relatively light build-up of fibers in a lip portion surrounding the central portion. As fibers are continuously deposited on the collecting and forming device, the product thus formed is withdrawn at a rate synchronized with collection of fibers such that the aforesaid build-up is maintained, and such that the lip portion is folded back over the central portion by the collecting and forming device to form the rod as described.

7 Claims, 7 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 1

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 4. Document ID: US 4111733 A

L5: Entry 4 of 11

File: USPT

Sep 5, 1978

US-PAT-NO: 4111733

DOCUMENT-IDENTIFIER: US 4111733 A

TITLE: Method and apparatus for continuous manufacture of undulating or corrugated material

DATE-ISSUED: September 5, 1978

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|-----------|-------|----------|---------|
| Periers; Gilbert | Courtraai | | | BEX |

US-CL-CURRENT: 156/204; 156/205, 156/227, 156/474, 198/577,
198/604, 198/817, 223/28, 493/441, 493/463

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ABSTRACT:

A method for the continuous manufacture of an undulating or corrugated longitudinal material in which a strip is projected longitudinally in the form of transverse folds between two longitudinal walls defining a passage or corridor having a height exceeding the thickness of the strip, a longitudinal displacement of said walls being caused in the direction of projection of the strip at a speed lower than the linear projection speed and decreasing in the direction of movement, in such a manner as to cause the packing or bunching of the folds inside the passage or corridor along the length of the material.

2 Claims, 4 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 3

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 5. Document ID: US 4102963 A

L5: Entry 5 of 11

File: USPT

Jul 25, 1978

US-PAT-NO: 4102963

DOCUMENT-IDENTIFIER: US 4102963 A

TITLE: Method of forming lignocellulosic fiber mats

DATE-ISSUED: July 25, 1978

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|-----------|-------|----------|---------|
| Wood; Dennis E. | Rochester | NY | | |

US-CL-CURRENT: 264/518; 264/121

ABSTRACT:

Resin treated lignocellulosic fibers are conveyed by a stream of air downwardly to a separator containing one or more doffing rolls, which rotate adjacent a perforated scroll assembly. At the side opposite the doffers the assembly is connected to a vacuum supply which draws dust and foreign particles out of the fibers as they fall downwardly through the separator and into a hopper located in the rear of a feeder assembly housing. From here the fibers are fed by endless belts or aprons to an expansion chamber formed in the rear of a condenser housing containing one above the other a pair of endless condensers or screens. The fibers cascade downwardly in the expansion chamber to a generally wedge-shaped air bridge formed at the inlet end of the space formed between the confronting runs of the condensers. This space is connected to a pair of suction fans so that the fibers are slightly compacted as they are sucked

by the fans through the throat of the air bridge and deposited on the confronting runs of the screen condensers. These two runs travel continuously toward the discharge end of the housing to produce an endless mat of fibers at the output. The upper belt is also mounted for vertical adjustment to vary the thickness of the mat.

4 Claims, 5 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 4

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☐ 6. Document ID: US 4100324 A

L5: Entry 6 of 11

File: USPT

Jul 11, 1978

US-PAT-NO: 4100324

DOCUMENT-IDENTIFIER: US 4100324 A

TITLE: Nonwoven fabric and method of producing same

DATE-ISSUED: July 11, 1978

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------------|----------|-------|----------|---------|
| Anderson; Richard A. | Menasha | WI | | |
| Sokolowski; Robert C. | Harrison | WI | | |
| Ostermeier; Kurt W. | Harrison | WI | | |

US-CL-CURRENT: 442/344; 156/167, 156/62.2, 264/121, 428/326,
428/401, 428/903, 442/400, 604/366, 604/370, 604/374

ABSTRACT:

A nonwoven fabric-like material having a unique combination of strength, absorbency and hand consists essentially of an air-formed matrix of thermoplastic polymer microfibers having an average fiber diameter of less than about 10 microns, and a multiplicity of individualized wood pulp fibers disposed throughout the matrix of microfibers and engaging at least some of the microfibers to space the microfibers apart from each other. The wood pulp fibers are interconnected by and held captive within the matrix of microfibers by mechanical entanglement of the microfibers with the wood pulp fibers, the mechanical entanglement and interconnection of the microfibers and wood pulp fibers alone forming a coherent integrated fibrous structure. The coherent integrated fibrous structure may be formed by the microfibers and wood pulp fibers without any adhesive, molecular or hydrogen bonds between the two different types of fibers. The wood pulp fibers are preferably distributed uniformly throughout the matrix of microfibers to provide a homogeneous material. The material is formed by initially forming a primary air stream containing the melt blown microfibers,

forming a secondary air stream containing the wood pulp fibers, merging the primary and secondary streams under turbulent conditions to form an integrated air stream containing a thorough mixture of the microfibers and wood pulp fibers, and then directing the integrated air stream onto a forming surface to air form the fabric-like material. The microfibers are in a soft nascent condition at an elevated temperature when they are turbulently mixed with the wood pulp fibers in air.

23 Claims, 15 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 5

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 7. Document ID: US 4089720 A

L5: Entry 7 of 11

File: USPT

May 16, 1978

US-PAT-NO: 4089720

DOCUMENT-IDENTIFIER: US 4089720 A

TITLE: Method and apparatus for making a nonwoven fabric

DATE-ISSUED: May 16, 1978

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|--------|-------|----------|---------|
| Haley; David J. | Durham | NC | | |

US-CL-CURRENT: 156/181, 156/167, 156/441, 19/296, 28/101, 28/102, 28/257, 428/108, 428/109

ABSTRACT:

Method and apparatus for making a nonwoven fabric wherein a first group of filaments are projected in a longitudinal direction into the nip of a pair of nipped and moving collecting surfaces in such a manner that the filaments fold into and are captured and held by the nip with spans of the filaments lying in the plane of the nip and at the same time projecting a second group of filaments in a longitudinal direction toward one of the collecting surfaces at a location spaced from the nip. The second group of filaments impinges on an impact plate positioned above the collecting surface and is pulled off the impact plate by the moving collecting surface, this causing the filaments in the second group to extend primarily in the machine direction. The moving collecting surfaces carry the groups of filaments into contact with each other to form a nonwoven fabric which is subsequently bonded in a conventional manner to form a finished fabric. In the finished fabric the filaments from the first group will for the most part extend across the fabric while the filaments from the second group will for the most part extend along the fabric to give a fabric having a stretch

on the bias.

3 Claims, 5 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 8. Document ID: US 4071925 A

L5: Entry 8 of 11

File: USPT

Feb 7, 1978

US-PAT-NO: 4071925
DOCUMENT-IDENTIFIER: US 4071925 A

TITLE: Apparatus for forming textile lap

DATE-ISSUED: February 7, 1978

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------|-------------|-------|----------|---------|
| Folk; Craig L. | New Orleans | LA | | |

US-CL-CURRENT: 19/296; 100/153

ABSTRACT:

An apparatus for pressing textile fiber and tufts into lap through the use of converging belts around and between compression rollers thus improving the uniformity and surface texture of the lap is disclosed. The device comprises a series of driven rollers, belts and compression springs uniquely arranged to transform open fibers and tufts into a uniform, compressed and homogenous lap.

7 Claims, 2 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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| MMIC | Draw Desc | Image |
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☐ 9. Document ID: US 3972092 A

L5: Entry 9 of 11

File: USPT

Aug 3, 1976

US-PAT-NO: 3972092
DOCUMENT-IDENTIFIER: US 3972092 A

TITLE: Machine for forming fiber webs

DATE-ISSUED: August 3, 1976

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|----------|-------|----------|---------|
| Wood; Dennis E. | Penfield | NY | | |

US-CL-CURRENT: 425/82.1; 19/306, 19/89

ABSTRACT:

In this machine, tufts of fibers are delivered from a feed section by an air bridge into a generally vertical chute past a rotary feeder condenser on which the fibers are formed into a mat which is carried onto a feed plate over which the mat is fed by a feed roller into a lickerin rotating at high speed. The lickerin, which is vertically below the condenser, combs fibers from the mat. The fibers are doffed from the lickerin through centrifugal force and by an air stream flowing past the lickerin. The air stream conveys the fibers through a generally vertical duct to an endless belt screen condenser on which they are deposited to form the random fiber web. The air is recirculated past the lickerin to aid in doffing the fibers from the lickerin.

8 Claims, 8 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 7

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 10. Document ID: US 3769115 A

L5: Entry 10 of 11

File: USPT

Oct 30, 1973

US-PAT-NO: 3769115

DOCUMENT-IDENTIFIER: US 3769115 A

TITLE: METHOD FOR THE PRODUCTION OF A FIBROUS SHEET MATERIAL

DATE-ISSUED: October 30, 1973

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------------|----------|-------|----------|---------|
| Rasmussen; Torben Borup | Tousvej | | | DK |
| Ottosen; Kjeld Dossing | Holmevej | | | DK |
| Persson; Torsten Bengt | Lystrup | | | DK |

US-CL-CURRENT: 156/62.2; 156/78

ABSTRACT:

A method for the production of a fibrous sheet material by passing a stream of gas containing suspended fibres through a gaspermeable

forming surface to form a fibrous layer thereon and bonding the fibres to each other or to a reinforcing material by means of a foamed binder.

4 Claims, 4 Drawing figures
Number of Drawing Sheets: 3

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☐ 11. Document ID: US 3589956 A

L5: Entry 11 of 11

File: USPT

Jun 29, 1971

US-PAT-NO: 3589956

DOCUMENT-IDENTIFIER: US 3589956 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: June 29, 1971

US-CL-CURRENT: 264/115; 148/DIG.12, 156/62.4, 264/126, 264/172.14,
264/172.15, 264/172.17, 264/172.18, 428/369

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| 3589956S | 0 |
| "3769115"[USPT] | 1 |
| 3769115S | 0 |
| "3972092"[USPT] | 1 |
| 3972092S | 0 |
| "4071925"[USPT] | 1 |
| 4071925S | 0 |
| "4089720"[USPT] | 1 |
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| "4100324"[USPT] | 1 |
| ((3589956 OR 3769115 OR 3972092 OR 4071925 OR 4089720 OR 4100324 OR 4102963 OR 4111733 OR 4357379 OR 4434205 OR 4440597)[PN]).USPT. | 11 |

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Search Results - Record(s) 1 through 11 of 11 returned.☐ 1. Document ID: US 3841005 A

L4: Entry 1 of 11

File: USPT

Oct 15, 1974

US-PAT-NO: 3841005

DOCUMENT-IDENTIFIER: US 3841005 A

TITLE: METATARSAL PAD MOUNTING FOR WEIGHT DISTRIBUTING SHOE SHANK

DATE-ISSUED: October 15, 1974

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------|-------------|-------|----------|---------|
| Cox; Ivan E. | Kansas City | MO | 64112 | |

US-CL-CURRENT: 36/76C

ABSTRACT:

A spring steel shoe shank interposed between the inner and outer sole of a shoe, which shank has a metatarsal pad mounted thereon to overlies and extend both forwardly and rearwardly beyond a transversely elongated forward metatarsal arch supporting portion of the shank. The shank has an intermediate portion of reduced width and a rear portion wider at its maximum width adjacent its forward end than said intermediate portion. The rear portion inclines gradually upwardly transversely toward the inner edge of the shank. The shank has a rectangular transversely extending slot in the forward transversely elongated portion and the metatarsal pad has a rectangular transversely extending rib closely fitting the slot to hold the metatarsal pad against shifting relative to the shank. The intermediate portion of the shank may have a longitudinal stiffening rib that extends into the forward and rear shank portions.

12 Claims, 9 Drawing figures

Number of Drawing Sheets: 2

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☐ 2. Document ID: US 3368934 A

L4: Entry 2 of 11

File: USPT

Feb 13, 1968

US-PAT-NO: 3368934
DOCUMENT-IDENTIFIER: US 3368934 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: February 13, 1968

US-CL-CURRENT: 428/195; 156/181, 156/62.4, 156/62.6, 428/369,
442/359, 442/409, 442/417

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☐ 3. Document ID: US 3202743 A

L4: Entry 3 of 11

File: USPT

Aug 24, 1965

US-PAT-NO: 3202743
DOCUMENT-IDENTIFIER: US 3202743 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: August 24, 1965

US-CL-CURRENT: 264/109; 425/83.1, 425/DIG.200

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| PMOC | Draw Desc | Image |
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☐ 4. Document ID: US 3086253 A

L4: Entry 4 of 11

File: USPT

Apr 23, 1963

US-PAT-NO: 3086253
DOCUMENT-IDENTIFIER: US 3086253 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: April 23, 1963

US-CL-CURRENT: 264/121; 19/304, 264/128, 425/83.1

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☐ 5. Document ID: US 3081207 A

L4: Entry 5 of 11

File: USPT

Mar 12, 1963

US-PAT-NO: 3081207

DOCUMENT-IDENTIFIER: US 3081207 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: March 12, 1963

US-CL-CURRENT: 442/320; 156/178, 156/62.4, 264/121, 425/1, 425/363,
425/6

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☐ 6. Document ID: US 2975470 A

L4: Entry 6 of 11

File: USPT

Mar 21, 1961

US-PAT-NO: 2975470

DOCUMENT-IDENTIFIER: US 2975470 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: March 21, 1961

US-CL-CURRENT: 425/151; 100/325, 264/128, 264/175, 425/182,
425/322, 425/371, 425/73, 425/83.1, 425/85

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☐ 7. Document ID: US 2931091 A

L4: Entry 7 of 11

File: USPT

Apr 5, 1960

US-PAT-NO: 2931091

DOCUMENT-IDENTIFIER: US 2931091 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: April 5, 1960

US-CL-CURRENT: 428/370; 264/168, 264/172.11, 264/172.14,
264/172.15, 264/172.16, 264/172.17, 264/172.18, 264/DIG.26, 28/247,
425/131.5, 425/DIG.217, 428/371, 428/395, 428/397

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☐ 8. Document ID: US 2886877 A

L4: Entry 8 of 11

File: USPT

May 19, 1959

US-PAT-NO: 2886877

DOCUMENT-IDENTIFIER: US 2886877 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: May 19, 1959

US-CL-CURRENT: 65/438; 156/167, 156/175, 156/180, 156/264,
156/62.4, 264/109, 28/219, 28/220, 28/262, 28/271, 425/325,
425/82.1, 425/83.1, 57/2, 57/200, 57/246, 57/249, 57/350, 57/400,
57/402, 57/404, 57/59, 65/504

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☐ 9. Document ID: US 2510229 A

L4: Entry 9 of 11

File: USPT

Jun 6, 1950

US-PAT-NO: 2510229

DOCUMENT-IDENTIFIER: US 2510229 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: June 6, 1950

US-CL-CURRENT: 156/324; 156/554, 19/304, 226/172, 29/4.55

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☐ 10. Document ID: US 2336745 A

L4: Entry 10 of 11

File: USPT

Dec 14, 1943

US-PAT-NO: 2336745

DOCUMENT-IDENTIFIER: US 2336745 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: December 14, 1943

US-CL-CURRENT: 264/10; 156/181, 156/501, 156/68, 210/505, 264/113,
264/121, 264/DIG.75, 28/271, 425/174.8E, 425/81.1, 425/82.1

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☐ 11. Document ID: US 2336744 A

L4: Entry 11 of 11

File: USPT

Dec 14, 1943

US-PAT-NO: 2336744

DOCUMENT-IDENTIFIER: US 2336744 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: December 14, 1943

US-CL-CURRENT: 28/119; 156/148, 264/157, 264/257, 264/324,
264/DIG 75, 28/118, 28/120, 425/68

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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| "2510229"[USPT] | 1 |
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| 2886877S | 0 |
| "2931091"[USPT] | 1 |
| 2931091S | 0 |
| "2975470"[USPT] | 1 |
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WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 10 of 10 returned.**☐ 1. Document ID: US 5707468 A

L2: Entry 1 of 10

File: USPT

Jan 13, 1998

US-PAT-NO: 5707468

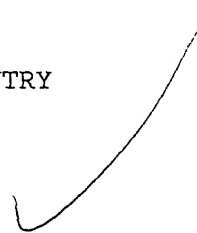
DOCUMENT-IDENTIFIER: US 5707468 A

TITLE: Compaction-free method of increasing the integrity of a nonwoven web

DATE-ISSUED: January 13, 1998

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------------------|------------|-------|----------|---------|
| Arnold; Billy Dean | Ramer | TN | | |
| Marmon; Samuel Edward | Alpharetta | GA | | |
| Pike; Richard Daniel | Norcross | GA | | |
| Primm; Stephen Harding | Cumming | GA | | |
| Romano, III; Lawrence James | Marietta | GA | | |
| Sasse; Philip Anthony | Alpharetta | GA | | |

US-CL-CURRENT: 156/62.6; 156/180, 156/181, 156/290, 156/296,
156/308.2, 156/309.9, 156/356, 428/198, 442/409, 442/411

ABSTRACT:

There is provided a process which comprises the step of subjecting a just produced spunbond web to a high flow rate, heated stream of air across substantially the width of the web to very lightly bond the fibers of the web together. Such bonding should be the minimum necessary in order to satisfy the needs of further processing yet not detrimentally affect the web. The fibers of the web may be monocomponent or biconstituent and the web should be substantially free of adhesives and not subjected to compaction rolls.

9 Claims, 4 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 3

[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Data](#) [Reference](#) [Sequences](#) [Attachments](#)[PubC](#) [Draw Desc](#) [Image](#)☐ 2. Document ID: US 5382400 A

L2: Entry 2 of 10

File: USPT

Jan 17, 1995

US-PAT-NO: 5382400

DOCUMENT-IDENTIFIER: US 5382400 A

TITLE: Nonwoven multicomponent polymeric fabric and method for making same

DATE-ISSUED: January 17, 1995

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------------|-------------|-------|----------|---------|
| Pike; Richard D. | Norcross | GA | | |
| Brown; Kurtis L. | Woodstock | GA | | |
| Gwaltney; Sharon W. | Woodstock | GA | | |
| Herschberger; Thomas A. | Appleton | WI | | |
| Siegel; Scott D. | Thomasville | NC | | |

US-CL-CURRENT: 264/168; 156/290, 156/308.2, 264/172.14, 264/172.15,
264/210.5, 264/210.8, 264/211.17, 28/104, 428/198, 428/373,
442/352, 442/361, 442/362, 442/364, 442/408

ABSTRACT:

A process for making nonwoven fabric including the steps of meltspinning continuous multicomponent polymeric filaments, drawing the multicomponent filaments, at least partially quenching the multicomponent filaments so that the multicomponents have latent helical crimp, activating the latent helical crimp, and thereafter, forming the crimped continuous multicomponent filaments into a first nonwoven fabric web. By crimping the filaments before the web formation, shrinkage of the web after formation is substantially reduced and the resulting fabric is substantially stable and uniform. In addition, the resulting fabric can have a relatively high loft. The crimp activating step can include heating the multicomponent filaments and preferably includes drawing the multicomponent filaments with a flow of heated air to activate the latent helical crimp. The resulting fabric can form relatively high loft materials useful as a fluid management layer for personal care absorbent articles or can form cloth-like fabric useful as cover materials and garment material. In addition, a nonwoven fabric comprising continuous single and multicomponent filaments and process for making same are provided. Still further, a multilayer nonwoven fabric with continuous multicomponent filaments and process for making same are provided. The degree of crimp in the filaments can be varied from layer to layer to produce composite webs with particular fluid handling properties.

30 Claims, 7 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

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☐ 3. Document ID: US 5108827 A

L2: Entry 3 of 10

File: USPT

Apr 28, 1992

US-PAT-NO: 5108827

DOCUMENT-IDENTIFIER: US 5108827 A

TITLE: Strong nonwoven fabrics from engineered multiconstituent fibers

DATE-ISSUED: April 28, 1992

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------|------------|-------|----------|---------|
| Gessner; Scott L. | Greenville | SC | | |

US-CL-CURRENT: 428/219; 428/373, 428/374, 428/401, 442/337,
442/341, 442/345, 442/361, 442/398, 442/400, 442/401

ABSTRACT:

The present invention provides a thermally-bonded nonwoven fabric that is made from a web which comprises from 100 to 5 percent by weight of multiconstituent fibers. The multiconstituent fibers are composed of highly dispersed blends of at least two different immiscible thermoplastic polymers and have a dominant continuous polymer phase with at least one noncontinuous phase dispersed therein. The noncontinuous phase exists as an elongated fibrillar polymer domain oriented generally in the direction of the fiber axis. No single polymer domain cross-section of said noncontinuous phase or phases is larger than 0.1% of the cross-sectional area of said fiber. The polymer of the noncontinuous phase or phases has a Polymer Melt Temperature (PMT) at least 30.degree. C. below the PMT of the continuous phase. The fiber is configured such that the noncontinuous phase or phases occupy a substantial portion of the fiber surface. In addition to such fabrics, laminates--made by combining nonwoven fabrics made from the materials and processes as described herein with films, paper, tissue, woven fabrics, or nonwoven fabrics such as meltblowns--are also contemplated. The fabric according to the invention readily bonds to other materials of the sorts mentioned, and is therefore suitable for use in filtration media, medical and clean room garments, CSR wrap, absorbent article backsheets, and other barrier structures.

26 Claims, 2 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

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☐ 4. Document ID: US 4837067 A

L2: Entry 4 of 10

File: USPT

Jun 6, 1989

US-PAT-NO: 4837067

DOCUMENT-IDENTIFIER: US 4837067 A

TITLE: Nonwoven thermal insulating batts

DATE-ISSUED: June 6, 1989

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|-------------|-------|----------|---------|
| Carey, Jr.; Patrick H. | Bloomington | MN | | |
| Kronzer; Joseph P. | Roseville | MN | | |

US-CL-CURRENT: 428/108; 428/105, 428/107, 428/112, 428/113,
428/114, 428/119, 428/222

ABSTRACT:

A nonwoven thermal insulating batt is provided. The batt comprises structural staple fibers and bonding staple fibers, the fibers being entangled and substantially parallel to the faces of the batt at the face portions and substantially perpendicular to the faces of the batt in the central portion of the batt. The bonding staple fibers are bonded to the structural staple fibers and other bonding staple fibers at points of contact. Also provided is a method of making the nonwoven thermal insulating batt which comprises air-laying a web of structural staple fibers and bonding staple fibers with the fibers being entangled and substantially parallel to the faces of the web at the face portions and in an angled, layered configuration in the central portions of the web. The air-laid web is reconfigured such that the fibers in the central portion of the web are substantially parallel and perpendicular to the faces of the web and the fibers are bonded to stabilize the reconfigured web to form the nonwoven thermal insulating batt.

15 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

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☐ 5. Document ID: US 4818464 A

L2: Entry 5 of 10

File: USPT

Apr 4, 1989

US-PAT-NO: 4818464

DOCUMENT-IDENTIFIER: US 4818464 A

TITLE: Extrusion process using a central air jet

DATE-ISSUED: April 4, 1989

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------|---------|-------|----------|---------|
| Lau; Jark C. | Roswell | GA | | |

US-CL-CURRENT: 264/510; 156/167, 264/12, 264/171.1, 264/211.14,
264/518, 264/555, 425/7, 425/72.2

ABSTRACT:

A thermoplastic material extrusion mechanism is provided which includes a die head having a centrally disposed high velocity gas delivery means adapted to continuously emit a jet of a gas having shear layers, at least one chamber for the thermoplastic material, thermoplastic material delivery means arranged at least partially surrounding the centrally disposed high velocity gas delivery means for directing extruded thermoplastic material emitted from the thermoplastic material delivery means toward the gas jet, causing the extruded thermoplastic material to be introduced into the shear layers of the gas jet, and a thermoplastic material conduit which communicates the at least one chamber with each of the thermoplastic material extrusion openings. A method of producing fibers of a thermoplastic material is also provided which comprises the steps of (a) forming a high velocity gas jet having shear layers, (b) extruding at least one stream of a molten thermoplastic material from at least one thermoplastic material delivery means arranged adjacent and at least partly surrounding the high velocity gas jet, and (c) merging the at least one thermoplastic material stream with the shear layers of the high velocity gas jet to attenuate the thermoplastic material into fibers, forming thereby fiber streams of the thermoplastic material.

10 Claims, 13 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 6

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☐ 6. Document ID: US 4590114 A

L2: Entry 6 of 10

File: USPT

May 20, 1986

US-PAT-NO: 4590114

DOCUMENT-IDENTIFIER: US 4590114 A

TITLE: Stabilized absorbent structure containing thermoplastic fibers

DATE-ISSUED: May 20, 1986

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|------------|-------|----------|---------|
| Holtman; Dennis C. | Flemington | NJ | | |

US-CL-CURRENT: 428/171; 156/209, 156/296, 156/62.2, 428/156,
428/198, 428/221, 428/326, 428/360, 442/411, 604/370

ABSTRACT:

A batt including a major percent of thermo-mechanical wood pulp fibers is stabilized by the inclusion of a minor percent of thermoplastic fibers, which latter fibers are heat fused to one another and to the thermo-mechanical wood pulp fibers at fiber intersections to provide a supporting network which inhibits collapse and agglomeration of the thermo-mechanical wood pulp fibers.

21 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 1

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☐ 7. Document ID: US 4340563 A

L2: Entry 7 of 10

File: USPT

Jul 20, 1982

US-PAT-NO: 4340563

DOCUMENT-IDENTIFIER: US 4340563 A

TITLE: Method for forming nonwoven webs

DATE-ISSUED: July 20, 1982

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|------------|-------|----------|---------|
| Appel; David W. | Wittenberg | WI | | |
| Morman; Michael T. | Appleton | WI | | |

US-CL-CURRENT: 264/518; 19/299, 264/210.8, 264/211.14, 264/237,
425/66, 425/72.2, 425/83.1

ABSTRACT:

An improved method and apparatus for forming nonwoven webs by spinning filaments into a quench chamber where they are contacted with a quenching fluid, then utilizing the quench fluid to draw the filaments through a two-dimensional nozzle spanning the full machine width, and collecting the filaments as a web on a porous surface. In contrast with the prior art, low motive fluid pressures can be used, and a non-eductive drawing means utilized to minimize air turbulence and the resulting filament entanglement in the drawing means while maintaining substantially constant cross

machine filament distribution. The apparatus and process reduce problems relating to filament breakage and spreading and result in increased productivity and improved web formation. Other advantages include the ability to continuously spin highly pigmented polymer filaments and reduced hazards associated with high noise levels.

8 Claims, 4 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 3

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 8. Document ID: US 3849241 A

L2: Entry 8 of 10

File: USPT

Nov 19, 1974

US-PAT-NO: 3849241

DOCUMENT-IDENTIFIER: US 3849241 A

TITLE: NON-WOVEN MATS BY MELT BLOWING

DATE-ISSUED: November 19, 1974

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|---------|-------|----------|---------|
| Butin; Robert R. | Baytown | TX | | |
| Keller; James P. | Baytown | TX | | |
| Harding; John W. | Baytown | TX | | |

US-CL-CURRENT: 428/137; 156/167, 264/210.8, 264/211, 264/211.17

ABSTRACT:

Melt blown non-woven mats prepared from thermoplastic polymer fibers and substantially completely free of polymer shot are produced at high polymer throughput rates in an improved melt blowing process in which thermoplastic polymer resins, preferably polypropylene, having initial intrinsic viscosities of at least 1.4, are degraded, optionally in the presence of a free radical source compound, to have both reduced intrinsic viscosities and an apparent viscosity in the melt-blowing nozzle orifices of from about 50 to about 300 poise.

37 Claims, 4 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
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☐ 9. Document ID: US 3802817 A

L2: Entry 9 of 10

File: USPT

Apr 9, 1974

US-PAT-NO: 3802817

DOCUMENT-IDENTIFIER: US 3802817 A

TITLE: APPARATUS FOR PRODUCING NON-WOVEN FLEECE

DATE-ISSUED: April 9, 1974

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------|---------|-------|----------|---------|
| Matsuki; Mutsuo | Nobeoka | | | JA |
| Nishimura; Sadaji | Fuji | | | JA |
| Goto; Masato | Fuji | | | JA |

US-CL-CURRENT: 425/66; 19/299, 264/210.2, 264/288.8, 264/555,
425/72.2, 425/83.1

ABSTRACT:

The invention relates to a process for the manufacture of a fleece-like sheet having a non-woven texture, from a large number of melt-spun monofilaments.

The improvement resides in the arrangement of the melt-spun monofilaments in a curtain-like form which is then subjected to the action of a pair of air jet streams in a sucker only once during travel of the curtain of monofilaments from the both sides thereof, the jet velocity of said jet streams being selected to be in the turbulent flow range, and then projected from the sucker onto a travelling gas pervious belt-like collector.

4 Claims, 6 Drawing figures

Number of Drawing Sheets: 3

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☐ 10. Document ID: US 2336743 A

L2: Entry 10 of 10

File: USPT

Dec 14, 1943

US-PAT-NO: 2336743

DOCUMENT-IDENTIFIER: US 2336743 A

TITLE: TEXT NOT AVAILABLE

DATE-ISSUED: December 14, 1943

US-CL-CURRENT: 156/74; 156/167, 156/177, 156/439, 264/171.23,
264/171.25, 264/172.11, 264/172.17, 264/198, 264/DIG.75; 425/7

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| "3802817"[USPT] | 1 |
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| "3849241"[USPT] | 1 |
| 3849241S | 0 |
| "4340563"[USPT] | 1 |
| 4340563S | 0 |
| "4590114"[USPT] | 1 |
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| "4818464"[USPT] | 1 |
| 4818464S | 0 |
| "4837067"[USPT] | 1 |
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L5: Entry 1 of 3

File: PGPB

Dec 27, 2001

PGPUB-DOCUMENT-NUMBER: 20010054777

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20010054777 A1

TITLE: Materials having z-direction fibers and folds and method for producing same

PUBLICATION-DATE: December 27, 2001

INVENTOR-INFORMATION:

| NAME | CITY | STATE | COUNTRY | RULE-47 |
|-------------------------|------------|-------|---------|---------|
| White, Edward Jason | Mauldin | SC | US | |
| Brown, Kurtis Lee | Alpharetta | GA | US | |
| Conrad, John Herbert | Alpharetta | GA | US | |
| Gerndt, Robert James | Roswell | GA | US | |
| Maldonado, Jose Enrique | Alpharetta | GA | US | |

US-CL-CURRENT: 264/103; 156/148, 156/176, 156/180, 264/171.1

ABSTRACT:

A method for producing a material having z-direction ridges or folds in which a layer of continuous fibers is conveyed on a first moving surface into a nip formed by the first moving surface and a second moving surface which is traveling at a slower speed than the first moving surface, resulting in formation of a plurality of z-direction loops in the fibers giving loft to the material and a wave pattern producing ridges on both major surfaces of the resultant nonwoven web. The method permits easy real time adjustment of manufacturing parameters to produce a variety of materials. The method further produces lofty nonwovens at a commercially viable rate.

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☒ 2. Document ID: US 6152905 A

L5: Entry 2 of 3

File: USPT

Nov 28, 2000

US-PAT-NO: 6152905

DOCUMENT-IDENTIFIER: US 6152905 A

TITLE: Absorbent interlabial device comprising a fluid acquisition/transfer complex

DATE-ISSUED: November 28, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|------------|-------|----------|---------|
| Osborn, III; Thomas W. | Cincinnati | OH | | |
| Visscher; Ronald B. | Glendale | OH | | |

US-CL-CURRENT: 604/378; 604/370, 604/385.01, 604/904

ABSTRACT:

The present invention provides an absorbent device insertable into the interlabial space of a female wearer. The absorbent device comprises a main absorbent portion comprising an upper portion and a lower portion. The upper portion has a top surface facing toward the vestibule floor of the wearer during insertion into the interlabial space. The upper portion leads the lower portion during insertion of the absorbent device; i.e., the lower portion is spatially opposed to the upper portion, and upon insertion of the absorbent device into a wearer's interlabial space, the lower portion faces away from the vestibule floor of the wearer. Additionally, a fluid acquisition/transfer complex is positioned about and extends at least from the upper portion of the main absorbent portion. The fluid acquisition/transfer complex is configured to be in intimate contact with the folds and creases of the interlabial space of the female wearer. Furthermore, the fluid acquisition/transfer complex receives fluid from the folds and creases of a wearer's interlabial space and transfers fluid to the main absorbent portion.

29 Claims, 8 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

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☒ 3. Document ID: US 5888607 A

L5: Entry 3 of 3

File: USPT

Mar 30, 1999

US-PAT-NO: 5888607

DOCUMENT-IDENTIFIER: US 5888607 A

TITLE: Soft loop laminate and method of making

DATE-ISSUED: March 30, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|----------|-------|----------|---------|
| Seth; Jayshree | Woodbury | MN | | |
| Rogers; John J. | St. Paul | MN | | |

US-CL-CURRENT: 428/92; 428/101, 428/95, 428/97, 428/99

ABSTRACT:

There is provided a soft nonwoven fibrous loop material for use in hook and loop fastening systems. The nonwoven fibrous loop material of the invention contains an open fibrous loop layer comprised predominately of polypropylene polymer, copolymer or blend fibers. The nonwoven fibrous loop layer material is autogeneously bonded to a backing layer formed of polypropylene polymers or copolymers having a percent isotacticity of less than 70%, optionally with additional layers present provided so

that the overall nonwoven fibrous loop material is a laminate having a circular bend stiffness of less than about 9 Newton and having tensile strength of at least 1500 g/2.54 cm-width.

40 Claims, 8 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 3

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